What is claimed is:

1. A shuttle vector for transforming insect cells, comprising:

   a. a prokaryotic origin of replication;

   b. an insect promoter having homology to, and capable of functioning as, an immediate early baculovirus promoter;

   c. a prokaryotic promoter sequence;

   d. a selectable marker gene capable of conferring resistance to a bleomycin/phleomycin-type antibiotic under the transcriptional control of the insect promoter and the prokaryotic promoter sequence, in insect and prokaryotic cells respectively.

2. The shuttle vector of claim 1, wherein the prokaryotic promoter sequence is a cryptic promoter within the insect promoter.

3. The shuttle vector of claim 1, wherein the bleomycin/phleomycin-type antibiotic is Zeocin.

4. The shuttle vector of claim 1, further comprising an insertion site for heterologous DNA.

5. The shuttle vector of claim 4, wherein the insertion site for heterologous DNA is under the transcriptional control of a second insect promoter.

6. The shuttle vector of claim 5, further comprising a heterologous DNA sequence inserted at the insertion site and under the transcriptional control of the second insect promoter.

7. The shuttle vector of claim 1, wherein the insect promoter comprises an IE2B element substantially homologous to SEQ ID NO: 10.

8. The shuttle vector of claim 7, wherein the insect promoter comprises a GATA-IE2B element pair substantially homologous to SEQ ID NO: 9 and SEQ ID NO: 10.

9. The shuttle vector of claim 8, wherein the insect promoter comprises a sequence substantially homologous to SEQ ID NO: 1 from bp 351 to bp 527.

10. The shuttle vector of claim 9, wherein the insect promoter comprises a sequence substantially homologous to SEQ ID NO: 1.

11. The shuttle vector of claim 1 further comprising DNA transposable elements defining a transposon.

12. The shuttle vector of claim 11, wherein the selectable marker gene is within the transposon.

13. The shuttle vector of claim 12, further comprising an insertion site for heterologous DNA within the transposon.

14. The shuttle vector of claim 13, further comprising a heterologous DNA sequence inserted at the insertion site and under the transcriptional control of a second insect promoter.

15. The shuttle vector of claim 11, further comprising an inducible transposase gene within the transposon.

16. Insect cells transformed with the shuttle vector of claim 1.

17. Insect cells transformed with the shuttle vector of claim 11.

18. A method of transforming insect cells comprising:

a. inducing the insect cells to take up an insect shuttle vector comprising a selectable marker gene under the transcriptional control of an insect promoter, the selectable marker gene being capable of conferring resistance to a bleomycin/phleomycin-type antibiotic, and the insect promoter having homology to, and being capable of functioning as, an immediate early baculovirus promoter; and,

b. selecting transformed cells that are resistant to the bleomycin/phleomycin-type antibiotic.

19. A method of increasing the copy number of a heterologous DNA sequence in a recombinant cell, comprising:

a. providing a recombinant cell having,

i. the heterologous DNA sequence positioned within a transposon defined by DNA transposable elements;

ii. an unobtrusive marker gene linked to the heterologous DNA sequence within the transposon;

iii. a transposase gene, the transposase being capable of mediating replicative transposition of the transposon;

b. permitting expression of the transposase gene to mediate replicative transposition of the heterologous DNA sequence; and,

c. monitoring the increase in copy number of the heterologous DNA sequence by monitoring the expression of the unobtrusive marker gene.

20. The method of claim 19 wherein the transposase gene is inducible and the step of permitting expression of the transposase gene comprises inducing expression of the transposase gene.

21. Recombinant insect cells transformed with the shuttle vector of claim 1, expressing a heterologous protein selected from the group consisting of melanotransferrins and biologically active derivatives thereof.

22. A heterologous protein produced by the cells of claim 21, selected from the group consisting of melanotransferrins and biologically active derivatives thereof.

23. Recombinant insect cells transformed with the shuttle vector of claim 1, expressing a heterologous protein selected from the group consisting of insect ion transport peptide hormones and biologically active derivatives thereof.

24. A heterologous protein produced by the cells of claim 23, selected from the group consisting of insect ion transport peptide hormones and biologically active derivatives thereof.

25. Insects comprising cells stably transformed with the vector of claim 1.

26. A recombinant cell comprising a heterologous, inducible transposase gene, wherein transposase is expressed in the cell at levels that mediate transposition only upon induction of the transposase gene.

add a6